REMARKS

In view of the foregoing amendments and the following remarks, Applicants respectfully request reexamination of the present application. Claims 1, 3 and 17 have been amended, Claims 6-8 have been cancelled and new Claims 47-49 have been added. Claims 1-5 and 9-49 are pending

Rejections – Double Patenting

The Examiner has rejected Claims 1-3 and 6-16 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-18 of U.S. Patent No. 6,660,680 by Hampden-Smith et al. The Examiner states that although the conflicting claims are not identical, they are not patentably distinct from each other because both the claims in the instant application and in the patent are directed to a powder batch comprising electrocatalyst particles comprising a support phase and an active species phase. The Examiner states that claims 1 and 14 of the '680 patent recite that the "active species phase" is a metal oxide active species phase, which is also recited in Claim 6 of the present application. The Examiner also states that a comparison of the respective sets of claims exhibits overlapping ranges of (1) the average particle size for the support phase, (2) the cluster size of the active species phase, and (3) the surface area of the electrocatalyst particles.

The Examiner states that the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malagari*, 182 U.S.P.Q. 549. Applicants note that Claims 6-8 have been cancelled and request that this double patenting rejection be held in abeyance until otherwise patentable subject matter is identified.

Rejections – 35 U.S.C. § 103

The Examiner has rejected Claims 1-5 and 9-23 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,876,867 by Itoh et al. The Examiner states that Itoh et al. teach electrocatalyst particles comprising platinum or an alloy thereof (considered to read upon the phrase "active species phase") supported on a conductive carbon powder

(considered to read upon the phrase "support phase"). The Examiner also states that the platinum (or platinum alloy) may be supported on the conductive carbon carrier in an amount of 1% to 60% by weight.

The Examiner states that the conductive carbon powder may be any conductive carbon powder known as carriers for electrocatalysts. As an example, the Examiner states that carbon black powders having a BET surface area of from 50 to 1500 m^2/g and a graphite crystallite diameter of from 7 to 80 Å (0.7 to 8 nm) may be used. The Examiner states that while Itoh et al. do not specifically teach the claimed average size of the "primary support particles" of "about 10 to about 100 nanometers" as recited in Claim 1 (or "about 20 to about 40 nanometers", i.e., Claim 17), one of ordinary skill in the art would expect that a difference of, for example, 20 Å is miniscule, especially when Itoh et al. clearly state that any conductive carbon powder known as carriers for electrocatalysts are suitable for electrocatalysts. The Examiner further states that it would have been obvious to one of ordinary skill in the art to select a conductive carbon carrier having the claimed particle size, since it has been held to be within the general skill of a worker in the art to select a material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 U.S.P.Q. 416.

The Examiner states that the platinum (or platinum alloy) has no particular limitations on the characteristics of crystallite diameter or surface area. However, the Examiner states that preferable ranges are 15-100 Å and 30-200 m^2/g, respectively.

In conclusion, the Examiner admits that Itoh et al. do not teach the specifically claimed ranges of, for example, the particle sizes of the "support phase" and "active species phase". However, the Examiner is of the opinion that the reference teaches values for these (and other) characteristics that *overlap* those respectively claimed and that the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness. *In re Malgari*, 182 U.S.P.Q. 549.

Applicants respectfully submit that not only does Itoh et al. not teach the claimed ranges of electrocatalyst particle size and active species phase size, but that Itoh et al. do

not even teach values for these characteristics that *overlap* those claimed. Further, these characteristics are not inherent in the electrocatalyst powders disclosed by Itoh et al.

In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983).

Obviousness cannot be predicated on what is not known at the time an invention is made, even if the inherency of a certain feature is later established. *In re Rijckaert,*9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert.* To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

Independent Claim 1 recites that the average cluster size of the active species phase is not greater than about 20 nanometers. This aspect of the claimed invention is discussed in detail at page 18, lines 10-22 of the present specification. The cluster size refers to the size of independent small single crystals or crystallite clusters. In contrast, Itoh et al. discloses a preferred *crystallite diameter* of 15 to 100 Å as determined by x-ray diffraction (Col. 7, lines 49-57). There is no disclosure by Itoh et al. regarding the size of the *active species clusters* in the electrocatalyst.

Further, it is submitted that the method of Itoh et al. is not capable of forming an active species phase with an average cluster size of not greater than about 20 nanometers

due to the process steps taught by Itoh et al. and therefore is *not an inherent feature* of Itoh et al.

As is disclosed in the present specification, at page 24, line 30 through page 25, line 3;

> Spray conversion or spray pyrolysis is a valuable processing method because the particles are raised to a high temperature for a short period of time. The relatively high temperature achieves conversion of the molecular precursor to the final desired phase, but the short time insures little surface diffusion that can cause agglomeration of the nanometer-size active phase. Hence, the support phase is formed with well dispersed nanometer sized active phase particles".

In contrast, the method of Itoh et al. requires that the particles be heated to an elevated temperature of from 750°C to 1000°C, and more preferably from 800°C to 900°C, for a retention time of from one minute to 5 hours, and more preferably from 20 minutes to 2 hours. (Column 5, lines 32-36). In the examples disclosed by Itoh et al., the particles are heated at a temperature of 900°C for 1.2 hours to form an alloy. (Column 10, lines 27-31). Such high temperatures for extended periods of time cause surface diffusion and clustering of the metal species on the support surface. Therefore, although Itoh et al. does disclose that the average *crystallite diameter* measured by x-ray diffraction is in the range of 15 to 100 Å, such a small cluster particle size is not inherent in the disclosure due to agglomeration of the active phase.

In addition, with respect to dependent Claims 12-13 and amended Claim 17, Itoh et al. do not disclose the recited average particle size. Itoh et al. do disclose that the electrocatalyst support can have a graphite *crystallite diameter* of from 7 to 80 Å. However, as with the active species cluster size, this provides no information relating to the actual particle size of the carbon particles. Since as the method of Itoh et al. does not appear to produce agglomerated primary support particles forming the electrocatalyst particles, it is respectfully submitted that the claimed size ranges are not disclosed or suggested by Itoh et al., nor are they inherent in the disclosure of Itoh et al.

In view of the foregoing, Applicant's respectfully request reexamination and allowance of Claims 1-5 and 9-49.

It is not believed that any additional fees are owed with this response, however any such fees can be charged to Deposit Account No. 50-1419.

In the event that a telephone conversation would further prosecute and or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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